

REMARKS

1. Amendments

Independent claims 1, 21 and 25 are amended to provide for further clarity and to indicate the following limitations: that the hydrocarbonaceous feedstock has a concentration of specifically recited sulfur compounds, that the group VIII metal of the catalyst is either platinum, rhodium, indium or a combination thereof and is present in a specifically recited concentration range, and that the catalyst carrier comprises a stabilized or partially stabilized zirconium. Support for these limitations may be found in the dependent claims and throughout the specification.

As a result of the amendments to the independent claims, claims 3-8, 10, 22-23, 27-29, and 31-32 have been cancelled.

Non-substantive amendments have been made to dependent claims 9, 24, 26, 30, and 35-37 to provide for references to proper dependencies or antecedents.

2. §103 Rejection of claims 1-44 over Frame (US 3,98,137) in view of Yoo (US 3,945,914) and Mahadev (WO 92/20621)

The primary reference of Frame teaches a process for the oxidation of sulfur compounds using a catalyst system that comprises both a Group VIIB (e.g. manganese and rhenium) phthalocyanine and a Group VIII (e.g. cobalt, iron, nickel, palladium, rhodium, ruthenium, osmium, iridium, and platinum) phthalocyanine.

The secondary reference of Yoo teaches a two-step process involving a first step of oxidation of sulfur contained in a hydrocarbon material in the presence of an oxidant and, preferably, a metal-containing catalyst, see e.g. column 2, lines 46-63, followed by contacting the oxidized sulfur-containing hydrocarbon material with a metal-containing compound under certain temperature conditions so as to form a metal-sulfur-containing compound. See e.g. column 1, lines 50-61; and column 7, lines 10-30. The preferred catalyst metals for the oxidation catalyst are Group IVB, Group VB, and Group VIB metals. See column 4, lines 7-10.

The third reference of Mahadev discloses a process for the removal of hydrogen sulfide and other sulfur compounds from sour natural gas and other fluid streams and the conversion of the sulfur therein to elemental sulfur. See e.g. page 1, lines 9-19. The Examiner uses the Mahadev publication to supply teachings concerning concentration ranges for sulfur compounds contained in a natural gas feedstream.

The Applicant respectfully submits that no modification of the Frame reference can possibly result in providing a process as claimed by the Applicant. Moreover, the references cited by the Examiner are not properly combinable.

As summarized above, Frame teaches the use of an oxidation catalyst system comprising both a Group VIIB metal phthalocyanine and a Group VIII metal phthalocyanine. The compounds of the catalyst system of the Frame patent are not similar in any way to the oxidation catalyst of the Applicant's claimed invention. The Applicant's claimed oxidation catalyst comprises a Group VIII noble metal on an at least a partially stabilized zirconia support. The two catalysts are hugely different. One of the differences, for example, is the requirement that the Frame catalyst includes a Group VIIB metal (Mn or Re). Another difference is the requirement by Frame that the catalytic components of its catalyst be metal phthalocyanine compounds.

The Frame catalyst is so different from the Applicant's claimed catalyst that there is no way that it may be modified by the application of the secondary and tertiary references to give the Applicant's claimed catalyst. Furthermore, the process of the Frame patent is, as well, hugely different from the Applicant's claimed process. For instance, the Frame process requires its treating of a sulfur-containing gas to be in the presence of a medium having a pH of from 8 to 14.


Due to the amendments to the independent claims, there is no need to respond to the Examiner's comments in respect to claims 20 and 44.

3. Conclusion

In view of the above amendments to the claims and remarks, the Applicant respectfully submits that the now pending claims 1-2, 9, 11-21, 24-26, 30, and 33-44 are patentable over the prior art. Thus, withdrawal of the Examiner's rejection and early allowance of these claims are respectfully requested.

Respectfully submitted,

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